

What is claimed is:

1. A method of writing data into a memory cell of a memory device, comprising:

(a) transmitting data input in response to a write command to a bitline;

(b) writing the input data on the bitline into a memory cell capacitor via a memory cell transistor;

(c) generating a write boosting signal in response to the write command and a bitline precharge signal;

(d) boosting a voltage of a capacitor connected between the write boosting signal and the bitline in response to the write boosting signal;

(e) boosting a voltage of the bitline to a predetermined level; and

(f) rewriting the input data into the memory cell capacitor with the boosted voltage of the bitline.

2. The method of claim 1, wherein the write boosting signal is set to at least one of a boosted voltage level or an external power supply voltage level, which is higher than a power supply voltage level of the memory device.

3. The method of claim 1, wherein in step (a), the boosted voltage level or the external power supply voltage level is applied to gates of isolation transistors connected between the bitline and a sense amplification unit so that the isolation transistors are turned on.

4. The method of claim 1, wherein in step (f), the power supply voltage level of the memory device is applied to the isolation transistors between the bitline and the sense amplification unit.

5. The method of claim 4, wherein the isolation transistors are turned off when the input data is at a logic high level.

6. The method of claim 4, wherein the isolation transistors are turned on when the input data is at a logic low level, and then the boosted voltage of the bitline is dropped to a ground voltage level by the sense amplification unit.

5 7. A memory device, comprising:  
wordlines, which are connected to gates of memory cell transistors;  
bitlines, which are connected to drains of the memory cell transistors;  
memory cell capacitors, which are connected to sources of the memory cell  
transistors;

10 a write boosting signal generation circuit, which generates a write boosting signal in response to a write command, a bitline precharge signal, and a block decoding signal, the block decoding signal selecting a memory cell array including a given memory cell transistor; and

15 capacitors, which are connected between the bitlines and the write boosting signal.

8. The memory device of claim 7, wherein the write boosting signal generation circuit comprises:

20 a PMOS transistor, a source of which is connected to a power supply voltage and a gate of which is connected to the bitline precharge signal;

an NMOS transistor, a source of which is connected to a ground voltage, a gate of which is connected to a bitline sensing signal, and a drain of which is connected to a drain of the PMOS transistor;

25 a latch unit, which is connected to the drains of the PMOS transistor and the NMOS transistor;

a first NAND gate, which receives an output of the latch unit and the write command;

an inverter, which inverts an output of the NAND gate; and

30 a second NAND gate, which is driven by a boosted voltage or an external power supply voltage higher than the power supply voltage, the second NAND gate outputting

the write boosting signal in response to an output of the inverter and the block decoding signal.

9. The memory device of claim 7 further comprising:

5 a sense amplification unit, which senses and amplifies a voltage of each of the bitlines; and

an isolation transistor, which is located between the bitline and the sense amplification unit, the transistor being gated by a bitline isolation signal.

10 10. The memory device of claim 9, wherein the bitline isolation signal has a boosted voltage level, when data is written into each of the memory cell capacitors with the write boosting signal inactivated, and has a power supply voltage level, when data is written into each of the memory cell capacitors with the write boosting signal activated.